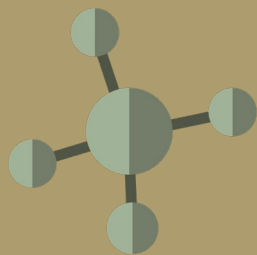


# RIBA 2030 CLIMATE CHALLENGE



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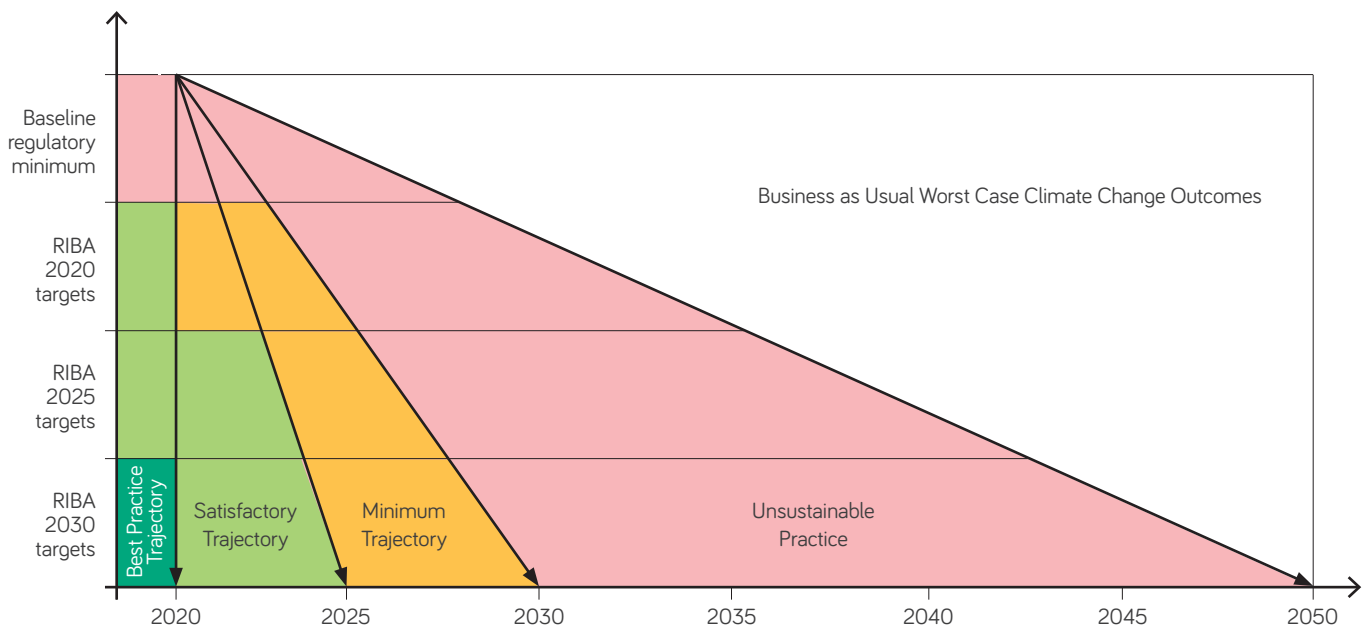
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# Take Action Now

On 29 June 2019 RIBA Council voted to join the global declaration of an environment and climate emergency, two days after the UK government passed a law to require the UK to end its contribution to global warming by 2050 by bringing all greenhouse gas emissions to net zero<sup>1</sup>.

The climate emergency demands urgent action and leadership by architects and the wider construction industry. We must act now, ensuring that new and retrofit buildings deliver net zero whole life carbon in advance of any future regulation. The recent Green Construction Board Buildings Mission 2030 report<sup>2</sup> shows that net zero operational carbon is already possible. The challenge for the profession is to extend good practice to all future work, as highlighted by the World Green Building Council's latest report on net zero embodied carbon<sup>3</sup>.

Net zero whole life carbon should be prioritised in lower density areas using on-site renewables. While for urban areas net zero whole life carbon will likely require additional offsite renewable energy generation and certified woodland offsetting<sup>4</sup> in the UK.



## RIBA 2030 Climate Challenge Trajectories

To ensure that the strong words of the declaration of a climate emergency are matched by actions, the RIBA has set RIBA Chartered Practices a challenge of achieving the following reductions as soon as possible:

1. Reduce operational energy demand by at least 75%, before UK offsetting
2. Reduce embodied carbon by at least 50-70%, before UK offsetting
3. Reduce potable water use by at least 40%
4. Achieve all core health and wellbeing targets (set out below)

These reductions will also form the basis of RIBA's recommendations to Government for future Building Regulations requirements.

<sup>1</sup> Climate Change Act 2008 (2050 Target Amendment) Order 2019]

<sup>2</sup> Buildings Mission 2030: Background Report to Recommendations from the Green Construction Board in response to the 2030 Buildings Mission (2019)

<sup>3</sup> World Green Building Council Advancing Net Zero embodied carbon call to action report (2019)



<sup>4</sup> Net Zero Carbon Buildings: A Framework Definition (2019)

# RIBA 2030 Climate Challenge Targets

The RIBA has developed targets for operational energy use, embodied carbon and water use reduction<sup>5</sup>. These take into account the latest recommendations from the Green Construction Board<sup>6</sup>, and have been developed by the RIBA in consultation with other UK professional bodies. The targets are progressive yet realistic, and a vital first step to ensure the construction industry has delivered the significant reductions necessary by 2030 in order to have a realistic prospect of achieving net zero carbon for the whole UK building stock by 2050.

These targets are based on domestic and commercial buildings and may need further refinement by sector, building type, occupancy and geographical location. The RIBA will seek to develop these additional metrics with other UK professional bodies. However, given the urgency, we cannot wait for the perfect benchmarks to be developed. The RIBA recommends that project teams aim for a percentage reduction of the current baselines and minimum regulatory standards, as shown in the trajectory diagram above, by using the targets set out in the detailed tables below.


## RIBA 2030 Climate Challenge target metrics for domestic buildings

RIBA Sustainable Outcome Metrics	Current Benchmarks	2020 Targets	2025 Targets	2030 Targets	Notes
<b>Operational Energy</b> kWh/m <sup>2</sup> /y 	146 kWh/m <sup>2</sup> /y (Ofgem benchmark)	< 105 kWh/m <sup>2</sup> /y	< 70 kWh/m <sup>2</sup> /y	< 0 to 35 kWh/m <sup>2</sup> /y	UKGBC Net Zero Framework 1. Fabric First 2. Efficient services, and low-carbon heat 3. Maximise onsite renewables 4. Minimum offsetting using UK schemes (CCC)
<b>Embodied Carbon</b> kgCO <sub>2</sub> e/m <sup>2</sup> 	1000 kgCO <sub>2</sub> e/m <sup>2</sup> (M4i benchmark)	< 600 kgCO <sub>2</sub> e/m <sup>2</sup>	< 450 kgCO <sub>2</sub> e/m <sup>2</sup>	< 300 kgCO <sub>2</sub> e/m <sup>2</sup>	RICS Whole Life Carbon (A-C) 1. Whole Life Carbon Analysis 2. Using circular economy Strategies 3. Minimum offsetting using UK schemes (CCC)
<b>Potable Water Use</b> Litres/person/day 	125 l/p/day (Building Regulations England and Wales)	< 110 l/p/day	< 95 l/p/day	< 75 l/p/day	CIBSE Guide G

## RIBA 2030 Climate Challenge target metrics for non-domestic buildings

RIBA Sustainable Outcome Metrics	Current Benchmarks	2020 Targets	2025 Targets	2030 Targets	Notes
<b>Operational Energy</b> kWh/m <sup>2</sup> /y 	225 kWh/m <sup>2</sup> /y DEC D rated (CIBSE TM46 benchmark)	< 170 kWh/m <sup>2</sup> /y DEC C rating	< 110 kWh/m <sup>2</sup> /y DEC B rating	< 0 to 55 kWh/m <sup>2</sup> /y DEC A rating	UKGBC Net Zero Framework 1. Fabric First 2. Efficient services, and low-carbon heat 3. Maximise onsite renewables 4. Minimum offsetting using UK schemes (CCC)
<b>Embodied Carbon</b> kgCO <sub>2</sub> e/m <sup>2</sup> 	1100 kgCO <sub>2</sub> e/m <sup>2</sup> (M4i benchmark)	< 800 kgCO <sub>2</sub> e/m <sup>2</sup>	< 650 kgCO <sub>2</sub> e/m <sup>2</sup>	< 500 kgCO <sub>2</sub> e/m <sup>2</sup>	RICS Whole Life Carbon (A-C) 1. Whole Life Carbon Analysis 2. Using circular economy Strategies 3. Minimum offsetting using UK schemes (CCC)
<b>Potable Water Use</b> Litres/person/day 	>16 l/p/day (CIRA W11 benchmark)	< 16 l/p/day	< 13 l/p/day	< 10 l/p/day	CIBSE Guide G

## RIBA 2030 Climate Challenge target metrics for all buildings

Best Practice Health Metrics 		References
Overheating	25-28 °C maximum for 1% of occupied hours	CIBSE TM52, CIBSE TM59
Daylighting	> 2% av. daylight factor, 0.4 uniformity	CIBSE LG10
CO <sub>2</sub> levels	< 900 ppm	CIBSE TM40
Total VOCs	< 0.3 mg/m <sup>3</sup>	Approved Document F
Formaldehyde	< 0.1 mg/m <sup>3</sup>	BREEAM

<sup>5</sup> Further guidance can be found in the RIBA Sustainable Outcomes Guide (November 2019)

<sup>6</sup> Buildings Mission 2030: Background Report to Recommendations from the Green Construction Board in response to the 2030 Buildings Mission (2019)

# RIBA 2030 Climate Challenge Checklist

Meeting the RIBA 2030 Climate Challenge targets is essential if architects are to play their part in mitigating climate change and limiting the rise of global temperature to below 1.5°C.

Action from government is also critical and the RIBA will campaign for Planning and Building Regulations to meet and/or exceed these targets as soon as possible.

The RIBA's 2030 Climate Challenge Checklist sets out the actions that Chartered Practices will need to take to meet the challenge targets.

Sign up at [www.architecture.com/2030challenge](http://www.architecture.com/2030challenge) and access tips and tools to assist RIBA Chartered Practices in taking the RIBA 2030 Climate Challenge and designing sustainable buildings.

## Are you ready to take the RIBA 2030 Climate Challenge and commit to meeting the targets?

### Existing building stock

- ✓ Assist existing clients with carrying out post occupancy evaluation and suggest strategies for fine-tuning existing buildings to reduce energy use and operational carbon emissions<sup>7</sup>.

### Whole life carbon

- ✓ Target net zero whole life carbon<sup>8</sup> for new and retrofitted buildings by 2030, by following the RIBA 2030 Climate Challenge targets.

### Operational energy and carbon emissions

- ✓ Target < 55 kWh/m<sup>2</sup>/y operational energy use for non-domestic buildings by 2030 (minimum DEC A or 75% reduction in operational energy as compared to CIBSE TM46 benchmarks<sup>9</sup>), including maximising the use of on-site renewables.
- ✓ Target < 35 kWh/m<sup>2</sup>/y operational energy use for domestic buildings by 2030 (minimum 75% reduction compared to current Ofgem benchmarks<sup>10</sup>) or the equivalent of Passivhaus<sup>11</sup>.
- ✓ Design using realistic predictions of the operational energy target to avoid the performance gap and report the energy use by fuel type and include the full breakdown of regulated and unregulated energy use. The RIBA recommends the use of rigorous design for performance methods such as CIBSE TM54<sup>12</sup> or Better Building Partnership Design for Performance<sup>13</sup>.
- ✓ Use low carbon heating, for example heat pumps or connections to district heat networks, and target no new connections to the gas grid or use of fossil fuel boilers, and target space heat demand of 15-20 kWh/m<sup>2</sup>/y, by 2025 at the latest, as recommended in the Committee of Climate Change UK housing: fit for the future? report<sup>14</sup>.
- ✓ Offset remaining carbon emissions by contributing to UK renewable energy projects that work towards decarbonising the national and/or local grid.

<sup>7</sup> RIBA Plan for Use Guide (November 2019)

<sup>8</sup> Net Zero Carbon Buildings: A Framework Definition (2019)

<sup>9</sup> CIBSE TM46: Energy Benchmarks (2008)

<sup>10</sup> Ofgem benchmarks from Buildings Mission 2030: Background Report to Recommendations from the Green Construction Board in response to the 2030 Buildings Mission (2019)

<sup>11</sup> Passivhaus requirements

<sup>12</sup> CIBSE TM54: Evaluating Operational Energy Performance of Buildings at the Design Stage (2013)

<sup>13</sup> Better Buildings Partnership Design for Performance (2019)

<sup>14</sup> Committee of Climate Change UK housing: fit for the future?

## Embodied energy and carbon emissions

- ✓ Prioritise the retrofit of existing buildings where possible.
- ✓ Use the RICS Whole Life Carbon Assessment for the Built Environment professional statement 2017<sup>15</sup> to assess embodied carbon.
- ✓ Target embodied carbon of 500 kgCO<sub>2</sub>e/m<sup>2</sup> for non-domestic buildings and 300 kgCO<sub>2</sub>e/m<sup>2</sup> for domestic buildings (minimum 50-70% reduction in embodied carbon compared to the Movement for Innovation benchmarks<sup>16</sup>), by prioritising building retrofit and using low carbon healthy materials that are responsibly and ethically sourced.
- ✓ Offset remaining carbon emissions by UK offsite renewable energy projects and/or certified woodland and reforestation projects<sup>17</sup>.

## Water use

- ✓ Target 10 litres/person/day for non-domestic buildings and 75 litres/person/day for domestic buildings (minimum 40% reduction in potable water use compared to CIRIA guidance<sup>18</sup> and UK Building Regulations requirements<sup>19</sup>), by minimising water demand, optimising building systems, and harvesting rainwater as well as recycling and reusing water on-site.

## Indoor health

- ✓ Avoid unintended consequences of poor health and wellbeing by meeting key health metrics set out in the RIBA 2030 Climate Challenge.

## Biodiversity

- ✓ Leave a site with significantly enhanced biodiversity and more green cover than before development.

## Delivery

- ✓ Follow the RIBA Plan of Work Sustainability Strategy<sup>20</sup> and RIBA Plan for Use Guide<sup>21</sup> and undertake at least light touch post occupancy evaluation<sup>22</sup> to gather predicted and actual performance of existing and new building projects and upload to the RIBA 2030 Challenge platform (when available), with clients' permission. For further guidance on the RIBA 2030 Climate Challenge targets and additional sustainability metrics see the RIBA Sustainable Outcomes Guide<sup>5</sup>.

<sup>15</sup> The RIBA recommends using categories A-C of the RICS Whole Life Carbon Assessment for the Built Environment Professional Statement (2017). Design tools exist that embody the RICS embodied carbon categories to help ensure consistency and equivalence of measurement. See also: RIBA Embodied and Whole Life Carbon Assessment for Architects (2017)

<sup>16</sup> The Movement for Innovation Sustainability Working Group Report: Environmental Performance Indicators for Sustainable Construction (2001)

<sup>17</sup> Reforestation projects include the Trillion Tree Campaign, Woodland Trust, and [Trees for Life](#).

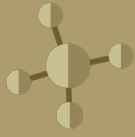
<sup>18</sup> CIRIA W11: Key Performance Indicators for water use in offices

<sup>19</sup> Building Regulation 36, guidance can be found in [Approved Document Part G](#)

<sup>20</sup> RIBA Plan of Work 2019 (November 2019)

<sup>21</sup> RIBA Plan for Use Guide (November 2019). Members may wish to use formal BSRIA Soft Landings processes

<sup>22</sup> In addition to the RIBA Plan for Use Guide see [Housing Fit for Purpose, Performance, Feedback and Learning, Fionn Stevenson \(2019\) for domestic post occupancy evaluation](#)



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